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By the preceding examination of the geological and physical evidence we have traced the general outlines of the evolution of the present drainage system of East Yorkshire through several successive stages, and we find that its history is intimately bound up with that of the whole of Eastern England since Palæozoic times. There are local details still waiting to be filled in, and branches of the subject still to be investigated, but it is believed that they will produce no evidence which will contradict the main results here worked out. The division of the physical history of the region since Cretaceous times into six stages or cycles is based on geological evidence which is practically incontrovertible; the assumptions as to the original slope of the surface and the deformation of the peneplain are supported by orographical measurements and geotectonic considerations of great weight, as well as by being in harmony with evidence from other parts of England; and, finally, the theory of consequent and subsequent streams has been established on a firm foundation by Davis and many other workers in the same field. The hypothesis of the secondary origin of the Moorland anticlinal as a watershed more or less parallel to the original consequent streams has been found to afford a natural and satisfactory explanation of the behavior and characters of the water courses which it concerns; and the modifications effected by the glacial period have been interpreted in most cases from direct field-evidence.

T. C. C.

The Conveyance of Water in Irrigation Canals, Flumes, and Pipes.
By Samuel Fortier. [Bulletin No. 22, Water Supply and
Irrigation Papers, Division of Hydrography, United States
Geological Survey.]

The paper calls attention to present practices in the conveyance of water in the irrigated districts in different parts of the arid West and points out ways in which works of this character may be built with greater permanence and at less cost than those now in existence. As the relation of the cost of delivering water to the value of the crop to be raised is the vital question in irrigation, this paper should be of especial value to those in anyway affected by the results of irrigation.

The report gives a comprehensive review of the various kinds of irrigation canals and ditches, discussing the faults and merits of each and dwelling on such problems of their operation as the effects of too great or too little grade, the growth of aquatic plants and their removal, the accumulation of ice in winter, and the flow of water as affected by the nature and condition of the conduits.

Considerable attention is given to the construction and serviceability of various kinds of wooden flumes, and their development from the simpler and cruder forms to the expensive but more satisfactory flumes and pipes. There is also a section devoted to the discussion of the cast iron pipes, their history in irrigation, durability and cost.

Copious illustrations and diagrams accompany the report and materially add to its value. As the extent of arid land in the United States is so vast, fully two thirds of its area, and includes some of the richest agricultural land on the globe, this information regarding the methods and growth of irrigation will be welcomed.

G. B. H.

The University Geological Survey of Kansas. Volume IV, Paleontology, Part II. By SAMUEL W. WILLISTON, Paleontologist.

This part two of the paleontology of Kansas is devoted to the description of the Carboniferous invertebrates and the Cretaceous fishes.

The Carboniferous invertebrates, from the Protozoa to Pelecypoda inclusive, have been discussed for the report by Dr. J. W. Beede. All the species have been fully described, so that the report will be a valuable manual for the study of Upper Carboniferous or Coal-measure invertebrates. Not since Meek's report on the Coal-measure faunas of eastern Nebraska, published in 1872 in the final report of the U. S. Geological Survey of Nebraska, has there appeared so comprehensive a report of the faunas of this age, and the report will be of great value to all workers in Upper Carboniferous paleontology whether in Kansas or elsewhere. The paper is illustrated by twenty-two plates. The completion of the report, including the treatment of the additional classes of invertebrates, is promised for the next part of the Paleontology of Kansas to be published by the Survey.

The literature on the Cretaceous fishes of Kansas has been widely scattered in the past, much of it having been published in Germany from collections secured from Kansas for the museums of German universities, and has been for the most part inaccessible to American students who have not had access to large libraries. In the present report the Selachians and Pycnodonts have been treated by Dr. S. W. Williston, and the Teleosts by Mr. Alban Stewart. These two papers together constitute a comprehensive report of the Kansas Cretaceous